

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

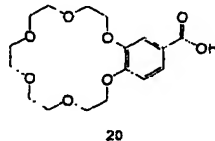
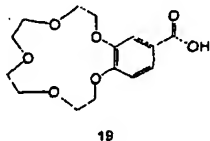
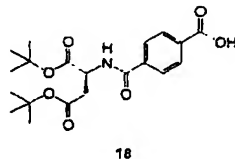
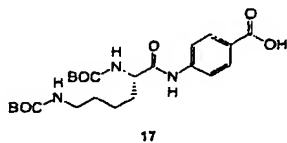
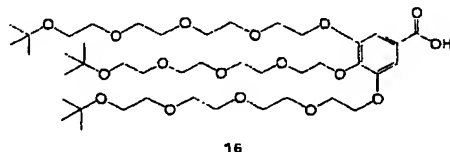
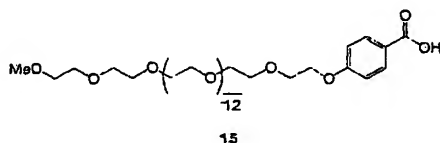
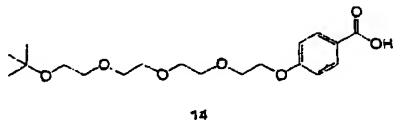
PCT

(10) International Publication Number
WO 2004/046167 A2

- (51) International Patent Classification⁷: C07K
- (21) International Application Number: PCT/US2003/036397
- (22) International Filing Date: 14 November 2003 (14.11.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/426,189 14 November 2002 (14.11.2002) US
- (71) Applicants (for all designated States except US): NORTHWESTERN UNIVERSITY [US/US]; 1880 Oak Avenue, Suite 100, Evanston, IL 60201 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): STUPP, Samuel, I. [US/US]; 57 E. Delaware Place, Apartment 2802, Chicago, IL 60611 (US). RABATIC, Bryan, M. [US/US]; 1575 Oak Avenue, Apartment 61, Evanston, IL 60201 (US).
- (74) Agent: MILLER, Raymond, A.; Pepper Hamilton LLP, 500 Grant Street, One Mellon Center, 50th Floor, Pittsburgh, PA 15219 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,

[Continued on next page]

(54) Title: SYNTHESIS AND SELF-ASSEMBLY OF ABC TRIBLOCK BOLA PEPTIDE



(57) Abstract: The present invention provides for bola amphiphiles compositions which have more than one lyophilic (hydrophilic) head group and a hydrophobic (hydrophobic) moiety capable of hydrogen bonding with other bola amphiphiles. These bola amphiphiles are capable of self assembling into micelles. The advantage of these bola amphiphiles is that they may self-assemble into micelles whose lyophilic head groups are located within the core and on the surface of the micelles. The lyophilic environment at the core and on the surface of the micelles may be different and may be controlled by the choice of head group moieties on the bola amphiphiles. The utility of these compositions is that they can be used to load or encapsulate polar drugs, DNA, mineralizable inorganic salts, or other molecules of interest within the polar interior of the micelle. Such compositions may also provide small water-filled ion-conducting channels within their structure suitable for use in micro electromechanical devices, as templates for nanowires or dielectrics, and as chemical sensors.